UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 4
Science and Ecosystem Support Division
Enforcement and Investigations Branch
980 College Station Road
Athens, Georgia 30605-2720

November 4, 2010

4SESD-EIB

MEMORANDUM

SUBJECT: Final Report 4th Quarter Groundwater Sampling Event
Sapp Battery Salvage NPL Site
Cottondale (Steel City) Jackson County, Florida
SESD Project No. 10-0676

FROM: Roger E. Carlton, Senior Environmental Engineer
Air and Superfund Section

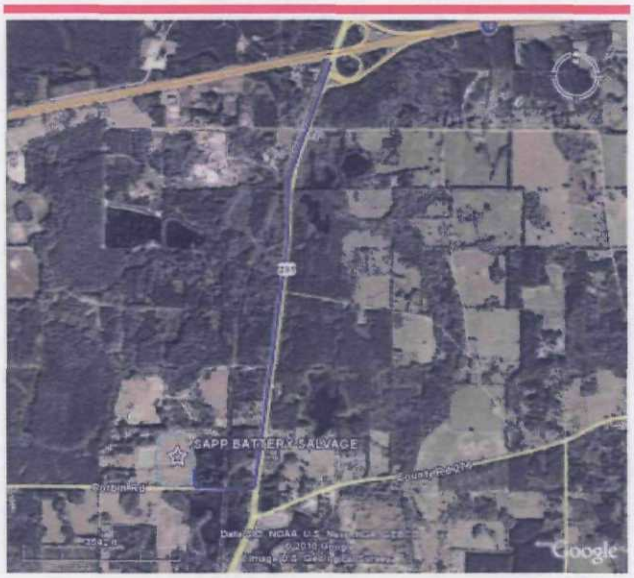
THRU: Mike Bowden, Chief
Air and Superfund Section

TO: Erik Spalvins, Project Manager
Superfund Remedial Section C
Superfund Remedial Branch
Superfund Division

The attached report has been completed. If you have any questions or comments, please feel free to contact me at (706) 355-8609.

Attachment

United States Environmental Protection Agency
Region 4
Science and Ecosystem Support Division
980 College Station Road
Athens, Georgia 30605-2720



4th Quarter Groundwater Sampling Event

Sapp Battery Salvage, NPL Site
Cottondale (Steel City), Jackson County, Florida
September 2010

SESD Project Identification Number: 10-0676

Requestor: Erik Spalvins
SD/SRASEB/Remedial Section C
61 Forsyth St. SW
Atlanta, Georgia 30303-8960

SESD Project Leader: Roger E. Carlton
SESD/EIB/Superfund and Air Section
980 College Station Road
Athens, Georgia 30605-2720

Title and Approval Sheet

Title: **Final Report**
4th Quarter Groundwater Sampling Event
Sapp Battery Salvage, NPL Site
Cottondale (Steel City), Jackson County, Florida

Approving Official:

M Bowden — 11/4/2010

Mike Bowden, Chief
Superfund and Air Section
Environmental Investigations Branch

Date

SESD Project Leader:

Roger E. Carlton — 11/4/2010

Roger E. Carlton, Senior Environmental Engineer
Superfund and Air Section
Environmental Investigations Branch

Date

4th Quarter Groundwater Sampling Event
Sapp Battery Salvage, NPL Site
Cottondale (Steel City), Jackson County, Florida
September 2010

LOCATION

Sapp Battery Salvage (Site) is located off US Highway 231, five miles south of Cottondale, Florida west of the intersection of Corbin Road, County Road 280 (CR 280). Upon arriving at the intersection of US 231 South and Corbin Road, turn right (west) cross over the Atlanta/St. Andrews Bay Railroad tracks, and the site is located on the north side of CR 280. The geographic coordinates for Sapp Battery Salvage approximate site center are 30° 43' 41.96" North Latitude and -85° 23' 37.13" East Longitude.

BRIEF SITE HISTORY

The Site housed a facility to recover lead from used automotive batteries from approximately 1970 to 1980. During the period of operation, battery casings and battery acid containing dissolved heavy metals were disposed of improperly onsite. As a result of the improper disposal and handling at the site, waste from the 'battery-cracking' flowed into an onsite cypress swamp. The swamps onsite and adjacent to the site are interconnected and drained into the Steel City Bay Marsh and eventually into Little Dry Creek killing most of the vegetation in its path.

Florida Department of Environmental Protection (FDEP) became involved at the site in 1977. FDEP's involvement began when cypress trees in the Steel City Bay Marsh, and beyond, began to show signs of stress. The only stressor located in the area was the Sapp Company battery cracking operations. Sapp Company was unsuccessful in their attempt to alleviate the offsite discharge. Following a series of legal actions initiated by the FDEP, Sapp Company ceased all operations very abruptly in January 1980.

Eventually, the US EPA became involved in the Pre-remedial and Remedial activities at the site. Over the course of investigations, the site was listed on the NPL. Once on the NPL, Superfund was able to stabilize surface conditions on site. However, groundwater monitoring would continue until levels, agreed upon by FDEP and EPA, are reached.

Upon completion of the stabilization of the waste, groundwater sample collecting events were convened. The analytical results from a combination of initial sample collecting events conducted by Black and Veatch (B&V), January and April 2005, indicated concentrations of lead in the groundwater at levels ranging from below the detection limit in most wells sampled to 100 µg/L in EW08D.

As a result of the appearance of lead in groundwater, additional monitor wells were installed. The analytical results of groundwater sample following installation, collected by B&V, July 2006, indicated overall groundwater contaminant concentrations had decreased.

Additional groundwater monitoring wells were installed, again, in 2008 and 2009. The most recent analytical results, April 2008/October 2009, indicated lead concentrations in groundwater ranged from below the detection limit to 21.6 µg/L in EW09D. Eleven additional wells, out of thirty-six wells and piezometers sampled during 2008 contained lead at concentrations between 1.5 µg/L and 93 µg/L and 4 µg/L to 18 µg/L in 2009.

SAMPLE DESCRIPTION and ANALYSIS:

SESD was requested by Mr. Erik Spalvins, EPA R4 Remedial Project Manager, to collect groundwater samples from several permanent groundwater monitoring wells and one temporary groundwater monitoring well at the Site. A conference call, followed by an exchange of electronic mail, e-mail, between SESD and FDEP Project Managers, focused in on eight of the onsite wells thought to be somewhat problematic. FDEP expressed concern with the wells that appeared to have turbidity related issues. SESD, from this information, proposed to collect groundwater from up to eight wells attempting to achieve as low of a turbidity reading as possible.

Prior to this sampling event, many of the wells had reportedly (B&V, 2008/2009) very high turbidity issues. In order to address the turbidity issue, and as stated in the Quality Assurance Project Plan (QAPP) for this project, a low flow/low stress purging method was selected. An additional condition, with respect to purging the well, was also imposed. The secondary condition stated if a reasonably low turbidity was not achieved within four hours of purging; a determination would be made as to whether to continue purging, to collect a groundwater sample or to properly abandon the well.

The low flow method is best described as matching the pump discharge rate (low flow) to that of the aquifer's ability to recharge to the well (low stress). This method effectively reduces the volume of water to be removed (micro purge) yet still achieves stability of the groundwater parameters. The purge rate (discharge rate) is matched to the recharge rate using a water level indicator (well sounder). The water level was constantly monitored during purging. When the water level reaches a point of "steady state" during pumping, it is then the discharge rate has matched the recharge rate (low flow/low stress).

Other factors that were considered include pump selection. The pump was chosen based on the distance from the ground surface to the top of the water column in the well. For instance, if the water level is less than or equal to twenty-five feet (25') below ground surface (BGS) a peristaltic pump will accomplish the task. However, if the water level is greater than 25' BGS a submersible pump must be used. Other considerations include placement for the suction inlet for the pump and the type of discharge tubing to be used. For this project, it was decided to lower the inlet port of the pump to the middle of the well screen interval. Most of the permanent monitoring well groundwater levels were all in access of 25' BGS; therefore, a submersible pump was chosen. The all stainless steel submersible pump was coupled to a one quarter (0.25") inch outside diameter Teflon® discharge tube using stainless steel fittings.

All samples were brought to the SESD Laboratory stored in coolers with ice. Upon arrival to the SESD Laboratory, the samples were transferred from the coolers to the holding

refrigerator prior to analysis. Sample analysis was conducted by SESD Laboratory Chemist (Appendix A).

RESULTS

Field Results

The low-flow/low-stress purging technique was successful in reducing the turbidity in most of the wells during this sample collecting event compared to the B&V 2009 sampling event (Table 1). The low flow/low stress purging technique also eliminated purging EW09D to dryness, a problem experienced by B&V in 2009.

TABLE 1
Comparing Turbidity
SESD vs. **B&V**
Sapp Battery Salvage NPL Site
Cottondale, Jackson County, Florida
September 2010

Station Identification	pH SU	Conductivity µmhos/cm	Temperature °C	**SESD – 2010** Turbidity NTU	**B&V – 2009** Turbidity NTU
EW08D	3.08	1013	25.2	**3.60**	**0.0**
EW09D	4.99	321	29.1	**35.6**	**DRY- Next day =212**
EW14D[1]	3.23	3.63	27.1	**438**	**18.2**
EW15D	4.14	243.7	26.7	**29.6**	**19.2**
EW22D	5.59	31.2	26.8	**4.43**	**3.61**
EW28D	4.18	390	27.2	**0.72**	**0.24**
EW32D[2]	Not Located/Not Collected				**1100**
PMW05A	4.41	481	29	**7.30**	**87.0**
TW101	5.33	304	27.3	**18.8**	(Not Installed)

[1] Turbidity was > 400 NTU after 6 hours of purging.

[2] EW32D was located at the edge of the swamp and was under water at the time of sample collection.

One exception was experienced with EW14D which started clearing up with respect to turbidity and after almost four hours of purging. The water column pulled down to within one foot of the top of the screen. The physical parameters were stable when the turbidity went from thirty-six nephelometric turbidity units (36 NTUs) to over four hundred (>400) NTUs. All attempts to surge the well and lower the turbidity failed. The site geologist, Amy Callaway, remarked that the well was finished in very fine silty clay. Additionally, the purge water smelled like swamp water. No additional attempts will be made to sample this well during future events and it is recommended this well should be properly abandoned. **Note**: A replacement well, EW35, has been installed adjacent to EW14D. The replacement well is finished at a shallower depth than EW14D, but still needs to be properly finished. A concrete pad and locking cover around the well head are all that are needed.

One other of the eight wells that could not be sampled was located off-site, EW32D (a flush mounted well). This well had been installed on the west side of the Southeast Swamp during a low water period. During the October 2010 sampling even, the monitor well was completely underwater and could not be located.

Analytical Results

Aluminum was fairly prevalent throughout the site. Aluminum was detected in both EW080910 and the duplicate sample EW9080910 at 29,000 µg/L. Iron, much like aluminum, was also prevalent in all groundwater samples. Again, iron was also very prevalent across the said and ranged between 650 µg/L to 69,000 µg/L. The maximum Lead concentration was detected in EW09D at 20 µg/L. Manganese was also detected in every groundwater sample with concentrations ranging from as low as 7 µg/L to 1,700 µg/L. Vanadium was not as prevalent as all the other elements and was only detected in four groundwater samples with concentrations between 5 µg/L and 86 µg/L. Aluminum (630 µg/L), Iron (650 µg/L), and Manganese (90 µg/L) all appear to be naturally occurring as evident in the groundwater sample analytical results for the temporary monitoring well TW101 installed during this event (Table 2).

TABLE 2
Analytical Data and Final Turbidity
Sapp Battery Salvage NPL Site
Cottondale, Jackson County, Florida
September 2010

Station ID	Sample ID	Aluminum µg/L	Iron µg/L	Lead µg/L	Manganese µg/L	Vanadium µg/L	Turbidity NTU
EW08D	EW08D0910	**29,000**	**68,000**	12	**1,700**	**86**	3.6
EW08D	EW908D0910	**29,000**	**69,000**	12	**1,700**	**86**	3.6
EW09D	EW09D0910	**1,600**	**3,500**	**20**	**180**	<5.0 U	35.6
EW15D	EW15D0910	**2,500**	**20,000**	14.0	**1,300**	5	29.6
EW22D	EW22D0910	**340**	**870**	1.1	7	<5.0 U	4.4
EW28D	EW28D0910	**3,500**	**26,000**	<1.0 U	**490**	**94**	0.7
PMW05A	PMW05A0910	**4,000**	**57,000**	1.4	**460**	7.6	7.3
TW101	TW1010910	**630**	**650**	<1.0 U	**90**	<5.0 U	18.8

CONCLUSIONS and RECOMMENDATIONS

Hydrogen sulfide odor and fine silts were present during purging of monitoring well EW14D. This situation indicates the well was improperly installed and installed in what remained of a swampy area that had been filled in and covered over. A truly representative sample of groundwater from this monitoring well was unattainable due to poor production and high turbidity; therefore, it is recommended that no future sample collecting attempts be made from EW14D and the well should be properly abandoned. It is also recommended, the "replacement monitoring well", EW35 be properly finished by installing a four foot by four foot by six inch thick concrete pad around the well head and either a flush mount well house or a locking protective riser cover. If this is not as soon as possible, the EW35 should also be

abandoned and a NEW replacement monitoring well be properly installed with the proper well head protection and a locking protective cover.

The history of groundwater contamination at this site has not changed much with respect to the concentrations of Aluminum, Iron, Manganese and Vanadium. These elements appear to be naturally occurring and constantly moving in the groundwater. The concentrations increase and decrease with no predictable frequency (Table 3). A locally installed meteorological station may assist in future monitoring at the site. Rainfall and pan evaporation measurements may give some indication as to when and/or how changes in concentrations occur if sampling events were to follow significant rainfall events or extended periods of draught. Without this information, it can be reasonably inferred that most, if not all, of the releases of Al, Fe, Mn and V are most likely due to percolation of rainwater through the upper soil profile.

TABLE 3
Comparing Concentrations from 2009 to those of 2010
Sapp Battery Salvage NPL Site

Station Id	2009 Al µg/L	CHANGE	2010 Al µg/L	2009 Fe µg/L	CHANGE	2010 Fe µg/L	2009 Pb µg/L	CHANGE	2010 Pb µg/L	2009 Mn µg/L	CHANGE	2010 Mn µg/L	2009 V µg/L	CHANGE	2010 V µg/L
EW08D	19,000	<	29,000	91,000	>	68,000	9	<	12	2,200	>	1,700	66	<	86
EW09D	9,290	>	1,600	15,600	>	3,500	106	>	20	169	<	180	21	>	5.0 U
EW15D	3,810	>	2,500	22,400	>	20,000	16.6	>	14	1,550	>	1,300	8.15 J	>	5.3
EW22D	51.4 J	<	340	328	<	870	3.7 U	=	1.1	6.31 J	=	6.9	0.819J	=	5.0 U
EW28D	3,150	<	3,500	28,600	>	26,000	3.7 U	=	1.0 U	463	<	490	76.4	<	94
PMW05A	889	<	4,000	35,300	<	57,000	3.7 U	=	1.4	1,370	>	460	4.74	<	7.6

In summary, Lead is the only element in which the concentration has consistently decreased over time. Lead is also the only element very much associated with the battery cracking that took place at the site in the past. The onsite surficial aquifer in the immediate vicinity of the site was impacted from activities that occurred at the site and should be, if it has not already been, restricted from use as a potable drinking water source.

The definition of useable aquifers by Florida Department of Environmental Protection, Source Water Assessment and Protection Program can be found in Appendix B.

APPENDIX A

Final Analytical Laboratory Data Sheets
13 Pages Follow

Inorganic Analysis
Total Metals (TMTL)
EPA 200.8 and 6010

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 10-0676
Project: 10-0676, SAPP Battery - Reported by Jenny Scifres

October 27, 2010

4SESD-ASB

MEMORANDUM

SUBJECT: FINAL Analytical Report
Project: 10-0676, SAPP Battery
Superfund Remedial

FROM: Jenny Scifres
ASB Inorganic Chemistry Section Chief

THRU: Gary Bennett, Chief
Analytical Support Branch

TO: Roger Carlton

Attached are the final results for the analytical groups listed below. These analyses were performed in accordance with the Analytical Support Branch's (ASB) Laboratory Operations and Quality Assurance Manual (ASB LOQAM) found at www.epa.gov/region4/sesd/asbsop. Any unique project data quality objectives specified in writing by the data requestor have also been incorporated into the data unless otherwise noted in the Report Narrative. Chemistry data have been verified based on the ASB LOQAM specifications and may have been qualified if the applicable quality control criteria were not met. For a listing of specific data qualifiers and explanations, please refer to the Data Qualifier Definitions included in this report. The reported results are representative only of the samples as received by the laboratory.

Analyses Included in this report:	Method Used:
Total Metals (TMTL)	
Total Metals	EPA 200.8
Total Metals	EPA 6010

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Sample Disposal Policy

Because of the laboratory's limited space for long term sample storage, our policy is to dispose of samples on a periodic schedule. Please note that within 60 days of this memo, the original samples and all sample extracts and/or sample digestates will be disposed of in accordance with applicable regulations. The 60-day sample disposal policy does not apply to criminal samples which are held until the laboratory is notified by the criminal investigators that case development and litigation are complete.

These samples may be held in the laboratory's custody for a longer period of time if you have a special project need. If you wish for the laboratory to hold samples beyond the 60-day period, please contact our Sample Control Coordinator, Debbie Colquitt, by e-mail at Colquitt.Debbie@epa.gov, and provide a reason for holding samples beyond 60 days

cc: Nardina Turner

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D.A.R.T. Id: 10-0676
Project: 10-0676, SAPP Battery - Reported by Jenny Scifres

SAMPLES INCLUDED IN THIS REPORT

Project: 10-0676, SAPP Battery

Sample ID	Laboratory ID	Matrix	Date Collected	Date Received
PB	E103906-01	Preservative Blank	9/22/10 12:00	9/24/10 8:47
EW08D0910	E103906-02	Groundwater	9/22/10 10:00	9/24/10 8:47
EW908D0910	E103906-03	Groundwater	9/22/10 10:25	9/24/10 8:47
EW09D0910	E103906-04	Groundwater	9/21/10 15:00	9/24/10 8:47
EW15D0910	E103906-05	Groundwater	9/22/10 14:15	9/24/10 8:47
EW22D0910	E103906-06	Groundwater	9/22/10 11:20	9/24/10 8:47
EW28D0910	E103906-07	Groundwater	9/22/10 14:15	9/24/10 8:47
PMW05A0910	E103906-08	Groundwater	9/21/10 15:05	9/24/10 8:47
TW1010910	E103906-09	Groundwater	9/22/10 16:10	9/24/10 8:47

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DATA QUALIFIER DEFINITIONS

U	The analyte was not detected at or above the reporting limit.

ACRONYMS AND ABBREVIATIONS

CAS	Chemical Abstracts Service Note: Analytes with no known CAS identifiers have been assigned codes beginning with "E", the EPA ID as assigned by the EPA Substance Registry System (www.epa.gov/srs), or beginning with "R4-", a unique identifier assigned by the EPA Region 4 laboratory.
MDL	Method Detection Limit - The minimum concentration of a substance (an analyte) that can be measured and reported with a 99% confidence that the analyte concentration is greater than zero.
MRL	Minimum Reporting Limit - Analyte concentration that corresponds to the lowest demonstrated level of acceptable quantitation. The MRL is sample-specific and accounts for preparation weights and volumes, dilutions, and moisture content of soil/sediments.
TIC	Tentatively Identified Compound - An analyte identified based on a match with the instrument software's mass spectral library. A calibration standard has not been analyzed to confirm the compound's identification or the estimated concentration reported.

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Project: 10-0676, SAPP Battery - Reported by Jenny Scifres

Total Metals

Project: 10-0676, SAPP Battery

Sample ID: PB
Station ID:

Lab ID: E103906-01
Matrix: Preservative Blank

Date Collected: 9/22/10 12:00

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
7429-90-5	Aluminum	100	U	ug/L	100	10/08/10 11:05	10/18/10 18:25	EPA 6010
7439-89-6	Iron	100	U	ug/L	100	10/08/10 11:05	10/18/10 18:25	EPA 6010
7439-92-1	Lead	1.0	U	ug/L	1.0	10/08/10 11:08	10/26/10 17:25	EPA 200.8
7439-96-5	Manganese	5.0	U	ug/L	5.0	10/08/10 11:05	10/18/10 18:25	EPA 6010
7440-62-2	Vanadium	5.0	U	ug/L	5.0	10/08/10 11:05	10/18/10 18:25	EPA 6010

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Total Metals

Project: 10-0676, SAPP Battery

Sample ID: EW08D0910 **Lab ID:** E103906-02
Station ID: EW08D **Matrix:** Groundwater

Date Collected: 9/22/10 10:00

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
7429-90-5	Aluminum	29000		ug/L	100	10/08/10 11:05	10/18/10 18:31	EPA 6010
7439-89-6	Iron	68000		ug/L	100	10/08/10 11:05	10/18/10 18:31	EPA 6010
7439-92-1	Lead	12		ug/L	1.0	10/08/10 11:08	10/26/10 17:29	EPA 200.8
7439-96-5	Manganese	1700		ug/L	5.0	10/08/10 11:05	10/18/10 18:31	EPA 6010
7440-62-2	Vanadium	86		ug/L	5.0	10/08/10 11:05	10/18/10 18:31	EPA 6010

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Total Metals

Project: 10-0676, SAPP Battery

Sample ID: EW908D0910 **Lab ID: E103906-03**
Station ID: EW08D **Matrix: Groundwater**

Date Collected: 9/22/10 10:25

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
7429-90-5	Aluminum	29000		ug/L	100	10/08/10 11:05	10/18/10 19:17	EPA 6010
7439-89-6	Iron	69000		ug/L	100	10/08/10 11:05	10/18/10 19:17	EPA 6010
7439-92-1	Lead	12		ug/L	1.0	10/08/10 11:08	10/26/10 17:43	EPA 200.8
7439-96-5	Manganese	1700		ug/L	5.0	10/08/10 11:05	10/18/10 19:17	EPA 6010
7440-62-2	Vanadium	86		ug/L	5.0	10/08/10 11:05	10/18/10 19:17	EPA 6010

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Total Metals

Project: 10-0676, SAPP Battery

Sample ID: EW09D0910 **Lab ID:** E103906-04
Station ID: EW09D **Matrix:** Groundwater

Date Collected: 9/21/10 15:00

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
7429-90-5	Aluminum	1600		ug/L	100	10/08/10 11:05	10/18/10 19:24	EPA 6010
7439-89-6	Iron	3500		ug/L	100	10/08/10 11:05	10/18/10 19:24	EPA 6010
7439-92-1	Lead	20		ug/L	1.0	10/08/10 11:08	10/26/10 17:47	EPA 200.8
7439-96-5	Manganese	180		ug/L	5.0	10/08/10 11:05	10/18/10 19:24	EPA 6010
7440-62-2	Vanadium	5.0	U	ug/L	5.0	10/08/10 11:05	10/18/10 19:24	EPA 6010

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Total Metals

Project: 10-0676, SAPP Battery

Sample ID: EW15D0910 **Lab ID: E103906-05**
Station ID: EW15D **Matrix: Groundwater**

Date Collected: 9/22/10 14:15

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
7429-90-5	Aluminum	2500		ug/L	100	10/08/10 11:05	10/18/10 19:29	EPA 6010
7439-89-6	Iron	20000		ug/L	100	10/08/10 11:05	10/18/10 19:29	EPA 6010
7439-92-1	Lead	14		ug/L	1.0	10/08/10 11:08	10/26/10 17:52	EPA 200.8
7439-96-5	Manganese	1300		ug/L	5.0	10/08/10 11:05	10/18/10 19:29	EPA 6010
7440-62-2	Vanadium	5.3		ug/L	5.0	10/08/10 11:05	10/18/10 19:29	EPA 6010

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Project: 10-0676, SAPP Battery - Reported by Jenny Scifres

Total Metals

Project: 10-0676, SAPP Battery

Sample ID: EW22D0910 **Lab ID:** E103906-06
Station ID: EW22D **Matrix:** Groundwater

Date Collected: 9/22/10 11:20

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
7429-90-5	Aluminum	340		ug/L	100	10/08/10 11:05	10/18/10 19:35	EPA 6010
7439-89-6	Iron	870		ug/L	100	10/08/10 11:05	10/18/10 19:35	EPA 6010
7439-92-1	Lead	1.1		ug/L	1.0	10/08/10 11:08	10/26/10 18:05	EPA 200.8
7439-96-5	Manganese	6.9		ug/L	5.0	10/08/10 11:05	10/18/10 19:35	EPA 6010
7440-62-2	Vanadium	5.0	U	ug/L	5.0	10/08/10 11:05	10/18/10 19:35	EPA 6010

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Total Metals

Project: 10-0676, SAPP Battery

Sample ID: EW28D0910 **Lab ID:** E103906-07
Station ID: EW28D **Matrix:** Groundwater

Date Collected: 9/22/10 14:15

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
7429-90-5	Aluminum	3500		ug/L	100	10/08/10 11:05	10/18/10 19:41	EPA 6010
7439-89-6	Iron	26000		ug/L	100	10/08/10 11:05	10/18/10 19:41	EPA 6010
7439-92-1	Lead	1.0	U	ug/L	1.0	10/08/10 11:08	10/26/10 18:10	EPA 200.8
7439-96-5	Manganese	490		ug/L	5.0	10/08/10 11:05	10/18/10 19:41	EPA 6010
7440-62-2	Vanadium	94		ug/L	5.0	10/08/10 11:05	10/18/10 19:41	EPA 6010

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 10-0676
Project: 10-0676, SAPP Battery - Reported by Jenny Scifres

Total Metals

Project: 10-0676, SAPP Battery

Sample ID: PMW05A0910 **Lab ID:** E103906-08
Station ID: PMW05A **Matrix:** Groundwater

Date Collected: 9/21/10 15:05

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
7429-90-5	Aluminum	4000		ug/L	100	10/08/10 11:05	10/18/10 19:47	EPA 6010
7439-89-6	Iron	57000		ug/L	100	10/08/10 11:05	10/18/10 19:47	EPA 6010
7439-92-1	Lead	1.4		ug/L	1.0	10/08/10 11:08	10/26/10 18:14	EPA 200.8
7439-96-5	Manganese	460		ug/L	5.0	10/08/10 11:05	10/18/10 19:47	EPA 6010
7440-62-2	Vanadium	7.6		ug/L	5.0	10/08/10 11:05	10/18/10 19:47	EPA 6010

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 10-0676
Project: 10-0676, SAPP Battery - Reported by Jenny Scifres

Total Metals

Project: 10-0676, SAPP Battery

Sample ID: TW1010910 **Lab ID:** E103906-09
Station ID: TW101 **Matrix:** Groundwater

Date Collected: 9/22/10 16:10

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
7429-90-5	Aluminum	630		ug/L	100	10/08/10 11:05	10/18/10 19:54	EPA 6010
7439-89-6	Iron	650		ug/L	100	10/08/10 11:05	10/18/10 19:54	EPA 6010
7439-92-1	Lead	1.0	U	ug/L	1.0	10/08/10 11:08	10/26/10 18:19	EPA 200.8
7439-96-5	Manganese	90		ug/L	5.0	10/08/10 11:05	10/18/10 19:54	EPA 6010
7440-62-2	Vanadium	5.0	U	ug/L	5.0	10/08/10 11:05	10/18/10 19:54	EPA 6010

APPENDIX B

Florida Aquifer Systems Defined

FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION
SOURCE WATER ASSESSMENT AND PROTECTION PROGRAM

This program is meant to ensure that your drinking water is safe, not just at the tap, but at its source. The Florida Department of Environmental Protection (DEP) is initiating the SWAPP as part of the federal Safe Drinking Water Act (SDWA)

The major source of ground water supply in Florida is the ***Floridan Aquifer System***, which underlies the entire state. In the far western panhandle and in southern Florida, the Floridan aquifer system is deep, and produces salty and mineralized water. In these areas, the shallower ***Sand-and-Gravel Aquifer*** (in the west) and the ***Biscayne Aquifer*** (in the south) are used for water supply. The ***Surficial Aquifer System*** and the ***Intermediate Aquifer System*** generally produce less water, and, with some exceptions, are used primarily for domestic and smaller public supply wells. Where there are clay layers in the intermediate system, it can serve as a confining unit, slowing the movement of water and, potentially, contaminants from the surface.

The surficial aquifer system in Florida includes any otherwise undefined aquifers that are present at land surface. Unlike the sand and gravel aquifer and the Biscayne aquifer, which supply water to large municipalities, the surficial aquifer is mainly used for domestic, commercial, or small municipal supplies. The surficial aquifer system is generally under unconfined, or water-table, conditions and is made up of mostly unconsolidated sand, shelly sand, and shell. The aquifer thickness is typically less than 50 feet but can range up to 400 feet in Indian River and St. Lucie Counties. Groundwater in the surficial aquifer generally flows from areas of higher elevation towards the coast or streams where it can discharge as base flow. Water enters the aquifer from rainfall and exits as base flow to streams, discharge to the coast, evapotranspiration, and downward recharge to deeper aquifers.

In southwestern Florida, aquifers that lie between the surficial aquifer system and the Floridan aquifer system are collectively referred to as the intermediate aquifer system. This aquifer system starts in Hillsborough and Polk counties and extends south through Collier County. The intermediate aquifer system is under confined conditions and is mainly comprised of permeable layers of sand, shell and limestone separated by clay confining units. It is the main source of water supply for Sarasota, Charlotte and Lee counties where the underlying Floridan aquifer contains brackish water. Much of the water pumped from this aquifer system is used for agriculture. In most places, water percolates down from the surficial aquifer system above to the intermediate aquifer system. Lateral flow is generally from a high area in Polk County towards major surface water features and the Gulf of Mexico.

END OF REPORT